

## REMARKS

In the Office Action dated September 14, 2006, claims 1-7 are cancelled and claims 8-27 are pending and subject to examination on the merits. The Examiner has acknowledged applicant's claim for priority under 35 U.S.C. §365(c) as a continuation of PCT/JP02/02744, filed March 22, 2002, which further claims priority to Japanese National Application No. 2001-084525, filed March 23, 2001. A certified translation of the PCT in English is requested to perfect the priority claim.

Claims 8-26 are rejected under 35 U.S.C. §112, second paragraph as allegedly indefinite. Claims 8, 11, 12, 16-22 and 27 have been rejected under 35 U.S.C. §102(b) as allegedly anticipated by each of Bucholz (Clinical Orthopaedics and Related Research, 2002), hereinafter “Bucholz”) and Erbe et al. (European Spine Journal, 2001, hereinafter “Erbe et al.”). Claims 8-27 have been rejected as allegedly unpatentable over a combination of four references de Bruijn et al. (EP 0987032, hereinafter “de Bruijn”), in view of Hakamazuka et al. (JP 01-108143, hereinafter “Hakamazuka et al.”), Muschler (WO 99/59500, hereinafter “Muschler”) and Klein-Nulend et al. (Journal of Cellular Physiology, 1995, hereinafter “Klein-Nulend et al.”).

In response, and in an effort to expedite favorable prosecution, applicants have amended claims 8, 9, 13, 14, 20-23, 25 and 27, to clarify the invention claimed. Claims 11-12, 16-19 and 26 have been cancelled, without prejudice.

The Examiner has rejected claims 8-26 under 35 U.S.C. §112, second paragraph as allegedly indefinite. The Examiner contends that it is not clear what is intended by “a marrow cell”. In response, applicants have amended the claims to clarify that the marrow cell incorporated in the porous ceramic is a “bone” marrow cell. Support for this amendment is found throughout the specification and particularly at page 10, line 19, for example.

Claims 12, 13, 21 and 22 have been rejected as allegedly unclear due to the phrase “macropores...that communicate to each other”. In response, and as indicated above, claims 13, 21 and 22 have been amended to specify that the porous ceramic has a porosity of 60% to 90% and includes interconnected macropores of e.g. size 100 µm to 500 µm, and micropores of size 2 µm or less. Support for this amendment is found through the specification and particularly at page 7, lines 11-17, for example.

Claim 18 is allegedly improperly dependent. In response, claim 18 has been cancelled without prejudice. Claims 16-19 are allegedly indistinct from claim 8. Claims 16-19 have also been cancelled without prejudice.

Claim 23 allegedly lacks antecedent basis according to the Examiner. Claim 23 has been amended and now properly depends from claim 20, by further limiting the methodology to include an incubation step. Support for the amendment to claim 23 is found throughout the specification and particularly at page 12, line 2, for example.

Claim 25 is rejected on the same basis as claim 23 and has now been amended to depend from claim 23, wherein adequate antecedent basis now exists. Support for claim 25 is found throughout the specification and particularly at page 20, lines 20-24, for example.

Finally, claim 27 has been rejected as allegedly dependent on the incorrect base claim. In response, claim 27 has been amended to properly depend from claim 20. No new matter has been added by any of the foregoing amendments. Reconsideration and withdrawal of all rejections under 35 U.S.C. §112, second paragraph is respectfully requested.

Claims 8, 11, 12, 16-22 and 27 have been rejected as allegedly anticipated by each of Bucholz and Erbe et al. The Examiner has noted that an English language translation of

the foreign priority papers could effectively moot the rejection under 35 U.S.C. §102(b), if submitted.

In response, applicants provide herewith a translation of the foreign priority application which will serve to perfect applicants' entitlement to the earliest priority date of March 23, 2001, which clearly antedates the publication dates of the cited references to Bucholz and Erbe et al. Accordingly, the rejection of claims 8, 11, 12, 16-22 and 27 under 35 U.S.C. §102(b) is overcome and withdrawal thereof is respectfully requested.

Claims 8-27 have been rejected under 35 U.S.C. §103(a) as allegedly unpatentable over de Bruijn in view of Hakamazuka, Muschler and Klein-Nulend et al. In regard to claims 11-13 and 16, the Examiner alleges that de Bruijn et al. teach ceramic materials that exhibit biocompatibility and biodegradability and are suitable for development of a porous scaffold material. It is specifically alleged that de Bruijn et al. teach beta-tricalcium as a preferred ceramic material and that a tricalcium phosphate scaffold exhibits macro- and microporosity wherein the macropores have a size of between 0.2 mm and 1.0 mm (200  $\mu$ m to 1000  $\mu$ m) and wherein the micropores have a size between 0.05  $\mu$ m and 20  $\mu$ m. De Bruijn et al. also allegedly teach interconnectivity between the micropores and macropores with an overall porosity between 20% and 90%. The Examiner admits that the ranges disclosed by Bruijn et al. are not identical to these presently claimed.

In response to this portion of the rejection, claims 11-12 and 16 have been cancelled without prejudice. Claim 13 has been amended to recite an artificial bone material comprising, *inter alia*, a porous ceramic having macropores present in an amount of 30% to 70% of the porosity and micropores present in an amount of 10% to 40% of the porosity.

Applicants acknowledge the Examiner's citation of In re Wertheim, 541 F.2d 257 (CCPA 1976). However, this case is inapposite inasmuch as de Bruijn et al. discloses a range of porosity so broad as to encompass a huge number of possible distinct compositions that it would not be reasonable to expect the skilled artisan to successfully achieve the specific porosity ranges achieved for the first time by the present invention. See In re Baird, 16 F.3d 380, 29 USPQ 2d 1550 (Fed. Cir. 1994); MPEP §2144.08.

In regard to claims 21, 22 and 24, the Examiner alleges that de Bruijn and Hakamazuka et al. broadly disclose methods of producing porous ceramic scaffolds for use in generating bone. The Examiner concedes that de Bruijn does not add cells to their scaffolds, *ex vivo*, and thus it would be obvious to colonize the scaffold of de Bruijn et al. *ex vivo* with cells prior to implantation. Applicants submit that such allegation is a clear example of an application of the "obvious to try" standard, which has long since been buried by the patent law. It is noted that each of claims 21, 22 and 24 depend from claim 20 which optionally requires the use of centrifugal force or applied pressure to incorporate the bone marrow cell which is neither taught nor suggested by any of the applied references.

In regard to claims 8-10, 14, 15, 17-20, 23 and 27, the Examiner alleges that culturing cells on the scaffold of de Bruijn to form an improved artificial bone material for implantation would have been expected to be successful because such methods of culturing cells were disclosed by Muschler, and further that Klein-Nulend disclosed subjecting a cell-seeded scaffold to mechanical loading.

In response, applicants have amended to claims as addressed above. The claims, as amended, are neither taught nor suggested by the cited references. The Examiner has succumbed to the all too familiar hindsight reconstruction of the present invention by cobbling

together bits and pieces of disclosure from multiple references to present a supposed suggestion to render the claims obvious. This type of hindsight reconstruction is clearly prohibited under the law. Accordingly, the rejection under 35 U.S.C. §103(a) is overcome as to all claims, and withdrawal thereof is respectfully requested.

In view of the above, it is respectfully submitted that this application is in condition for allowance. Accordingly, it is respectfully requested that this application be allowed and a Notice of Allowance issued. If the Examiner believes that a telephone conference with Applicants' attorneys would be advantageous to the disposition of this case, the Examiner is requested to telephone the undersigned.

Respectfully submitted,



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